

M25 Junction 28 improvement scheme

TR010029

6.3 Environmental Statement

Appendix 6.2: Construction noise and vibration

APFP Regulation 5(2)(a)
Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009



Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

M25 junction 28 scheme Development Consent Order 202[x]

6.2 ENVIRONMENTAL STATEMENT APPENDIX 6.3 CONSTRUCTION NOISE AND VIBRATION

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Planning Inspectorate Scheme Reference:	TR010029
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Author:	M25 junction 28 improvement scheme project team, Highways England

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Appendix 6.2

Construction noise and vibration

6. Construction noise and vibration

6.1 Introduction

- 6.1.1 This document presents the data used to predict the daytime and night-time construction noise levels for the Scheme that are presented in the Noise and Vibration chapter (Chapter 6) of ES (application document TR010029/APP/6.1) and monthly breakdown of highest daily daytime and night-time construction noise levels month with and without mitigation.
- 6.1.2 Information relating to the proposed construction activities, plant lists, on-times, and construction phasing was provided by the buildability contractor, along with an indicative construction programme. Noise data from BS 5228:2009 + A1:2014 has been assigned to the named items of plant in order to calculate the activity noise level. Other data sources, such as measurement data, have been used where a similar item of plant could not be found in BS 5228.
- 6.1.3 For further information regarding the assessment methodology and assumptions, please refer to Noise and Vibration chapter (Chapter 6) of ES (application document TR010029/APP/6.1).

6.2 Construction noise

- 6.2.1 Table 6.1 shows the construction activity considered for the study and the associated plant list and the respective noise levels, quantity percentage on-time and corrections.

Table 6.1: Construction equipment list per activity

Construction Activity	Plant	Total L _{Aeq} at 10m (dB)	Quantity	Percentage on-time (%)	Correction (dB)	L _{Aeq} corrected (dB)
Site enabling works	Tracked excavator (14T)	69	1	85	-0.7	68.3
	4 axled tipper wagon	80	2	85	-0.7	82.3
Utilities diversion	Tracked excavator (14T)	69	1	85	-0.7	68.3
	Dumper (6T)	79	1	85	-0.7	78.3
	Water pump	68	2	100	0.0	71.0
Site compound set-up	Tracked excavator (25T)	77	2	85	-0.7	79.3
	Tracked dozer D6 (20T)	83	2	85	-0.7	85.3
	Articulated dump truck	81	4	85	-0.7	86.3
	4 axled tipper wagon	80	2	85	-0.7	82.3
	Dumper (6T)	79	2	85	-0.7	81.3
	Roller (12T)	84	2	40	-4.0	83.0
	Concrete mixer truck	80	1	40	-4.0	76.0
	Poker vibrator	78	1	85	-0.7	77.3
	Road roller	80	2	85	-0.7	82.3
	Asphalt paver	77	1	85	-0.7	76.3
Site compounds maintenance	4 axled tipper wagon	80	10	85	-10.0	80.0
	Tracked excavator (25T)	77	3	85	-10.0	71.8
	Diesel generator	66	2	100	0.0	69.0
	Road sweeper	76	1	40	-10.0	66.0
	Wheeled loader	79	2	20	-10.0	72.0
	Telescopic handler	79	2	85	-10.0	72.0
	Fuel tanker lorry	76	1	20	-10.0	66.0

Construction Activity	Plant	Total L _{Aeq} at 10m (dB)	Quantity	Percentage on-time (%)	Correction (dB)	L _{Aeq} corrected (dB)
Cadent and UKPN gas diversion works	Tracked excavator (14T)	69	1	85	-0.7	68.3
	Wheeled mobile telescopic crane (400T)	78	2	40	-4.0	77.0
	Large lorry	80	2	85	-0.7	82.3
	Angle grinder	80	1	20	-7.0	73.0
	Dumper (6T)	79	2	85	-0.7	81.3
	Water pump	68	2	100	0.0	71.0
Traffic management	Lorry	80	2	20	-7.0	76.0
Earthworks	Tracked excavator (25T)	77	3	85	-0.7	81.1
	Tracked dozer D6 (20T)	83	1	85	-0.7	82.3
	Articulated dump truck	81	2	85	-0.7	83.3
	4 axled tipper wagon	80	2	85	-0.7	82.3
	Roller (12T)	84	2	40	-4.0	83.0
Drainage	Tracked excavator (14T)	69	1	85	-0.7	68.3
	Roller (1.5T)	77	1	40	-4.0	73.0
	Dumper (6T)	79	2	85	-0.7	81.3
	4 axled tipper wagon	80	2	85	-0.7	82.3
Retaining walls	Water pump	68	1	100	0.0	68.0
	Piling rig	77	1	85	-0.7	76.3
	Concrete mixer truck	80	1	40	-4.0	76.0
	Tracked excavator (14T)	69	2	85	-0.7	71.3
	Dumper (6T)	79	1	85	-0.7	78.3
	Poker vibrator	78	1	40	-4.0	74.0

Construction Activity	Plant	Total L _{Aeq} at 10m (dB)	Quantity	Percentage on-time (%)	Correction (dB)	L _{Aeq} corrected (dB)
Road formation level	Concrete pump	80	1	20	-7.0	73.0
	Tracked excavator (25T)	77	3	85	-0.7	81.1
	Tracked dozer D6 (20T)	83	1	85	-0.7	82.3
	Grader	81	2	85	-0.7	83.3
	Articulated dump truck	81	2	85	-0.7	83.3
	4 axled tipper wagon	80	2	85	-0.7	82.3
	Roller (12T)	84	2	40	-4.0	83.0
Paving and surface course	Road planer	82	1	85	-0.7	81.3
	Power for lighting	65	2	75	-1.2	66.8
	Road roller	80	2	85	-0.7	82.3
	Asphalt paver	77	1	85	-0.7	76.3
	4 axled tipper wagon	80	2	85	-0.7	82.3
Ground stabilisation	Piling rig	77	1	85	-0.7	76.3
	Concrete mixer truck	80	1	40	-4.0	76.0
	Tracked excavator (14T)	69	1	85	-0.7	68.3
	Poker vibrator	78	1	40	-4.0	74.0
	Concrete pump	80	1	20	-7.0	73.0
Abutments and bridges	Water pump	68	1	100	0.0	68.0
	Piling rig	77	1	85	-0.7	76.3
	Concrete mixer truck	80	1	40	-4.0	76.0
	Tracked excavator (14T)	69	2	85	-0.7	71.3
	Dumper (6T)	79	1	85	-0.7	78.3
	Poker vibrator	78	1	40	-4.0	74.0

Construction Activity	Plant	Total L _{Aeq} at 10m (dB)	Quantity	Percentage on-time (%)	Correction (dB)	L _{Aeq} corrected (dB)
Embankments	Concrete pump	80	1	20	-7.0	73.0
	Tracked excavator (25T)	77	3	85	-0.7	81.1
	Tracked dozer D6 (20T)	83	1	85	-0.7	82.3
	Articulated dump truck	81	2	85	-0.7	83.3
	4 axled tipper wagon	80	2	85	-0.7	82.3
	Roller (12T)	84	2	40	-4.0	83.0
Watercourse realignment	Tracked excavator (25T)	77	3	85	-0.7	81.1
	Tracked dozer D6 (20T)	83	1	85	-0.7	82.3
	Articulated dump truck	81	2	85	-0.7	83.3
	4 axled tipper wagon	80	2	85	-0.7	82.3
	Roller (12T)	84	2	40	-4.0	83.0
Install culvert	Tracked excavator (25T)	77	3	85	-0.7	81.1
	Tracked dozer D6 (20T)	83	1	85	-0.7	82.3
	Articulated dump truck	81	2	85	-0.7	83.3
	4 axled tipper wagon	80	2	85	-0.7	82.3
	Roller (12T)	84	2	40	-4.0	83.0
Assembly of beams and construction of bridge deck	Wheeled mobile telescopic crane (400T)	78	2	40	-4.0	77.0
	Large lorry	80	2	85	-0.7	82.3
	Air gun	83	2	10	-10.0	76.0
	Compressor for air gun	65	2	10	-10.0	58.0
Road construction	Road planer	82	1	85	-0.7	81.3
	Tracked excavator (25T)	77	3	85	-0.7	81.1

Construction Activity	Plant	Total L _{Aeq} at 10m (dB)	Quantity	Percentage on-time (%)	Correction (dB)	L _{Aeq} corrected (dB)
	Grader	81	2	85	-0.7	83.3
	Articulated dump truck	81	2	85	-0.7	83.3
	Power for lighting	65	2	75	-1.2	66.8
	Dumper (6T)	79	2	85	-0.7	81.3
	Road roller	80	2	85	-0.7	82.3
	Asphalt paver	77	1	85	-0.7	76.3
	4 axled tipper wagon	80	2	85	-0.7	82.3
Install road restraint system	Mini piling rig	75	2	60	-2.2	75.8
	Mini tracked excavator (3T)	68	2	85	-0.7	70.3
	Impact wrench	83	2	30	-5.2	80.8
	Compressor	75	2	30	-5.2	72.8
	Lorry mounted crane	70	2	20	-7.0	66.0
Installation of ancillary infrastructure	Tracked excavator (14T)	69	1	85	-0.7	68.3
	Dumper (6T)	79	2	85	-0.7	81.3
	Piling rig	77	1	85	-0.7	76.3
	Road roller	80	2	85	-0.7	82.3
Road remarking	Lorry	80	2	75	-1.2	81.8
Disassemble gantry structure	Wheeled mobile telescopic crane (400T)	78	2	40	-4.0	77.0
	Large lorry	80	2	85	-0.7	82.3
	Impact wrench	83	2	30	-5.2	80.8
	Compressor	75	2	30	-5.2	72.8
	Angle grinder	80	1	20	-7.0	73.0

Construction Activity	Plant	Total L _{Aeq} at 10m (dB)	Quantity	Percentage on-time (%)	Correction (dB)	L _{Aeq} corrected (dB)
	Telescopic handler	79	2	85	-10.0	72.0
	Diesel scissor lift	78	1	40	-4.0	74.0
Demolish gantry base	Tracked excavator (25T)	77	3	85	-0.7	81.1
	Tracked dozer D6 (20T)	83	1	85	-0.7	82.3
	Articulated dump truck	81	2	85	-0.7	83.3
	4 axled tipper wagon	80	2	85	-0.7	82.3
	Roller (12T)	84	2	40	-4.0	83.0
	Hand held circular saw - petrol	84	1	20	-7.0	77.0
	Angle grinder	80	1	20	-7.0	73.0
	Pneumatic breaker	80	1	40	-4.0	76.0
	Wheeled loader	79	2	20	-10.0	72.0
Construct piled foundation	Tracked excavator (14T)	69	1	85	-0.7	68.3
	Dumper (6T)	79	2	85	-0.7	81.3
	Piling rig	77	1	85	-0.7	76.3
	Road roller	80	2	85	-0.7	82.3
Construct gantry base	Water pump	68	1	100	0.0	68.0
	Concrete mixer truck	80	1	40	-4.0	76.0
	Concrete pump	80	1	20	-7.0	73.0
	Poker vibrator	78	1	40	-4.0	74.0
	Tracked excavator (14T)	69	1	85	-0.7	68.3
	Dumper (6T)	79	2	85	-0.7	81.3
Install steel works	Wheeled mobile telescopic crane (400T)	78	2	40	-4.0	77.0

Construction Activity	Plant	Total L _{Aeq} at 10m (dB)	Quantity	Percentage on-time (%)	Correction (dB)	L _{Aeq} corrected (dB)
	Large lorry	80	2	85	-0.7	82.3
	Impact wrench	83	2	30	-5.2	80.8
	Compressor	75	2	30	-5.2	72.8
	Angle grinder	80	1	20	-7.0	73.0
	Telescopic handler	79	2	85	-10.0	72.0
	Diesel scissor lift	78	1	40	-4.0	74.0
Install/Remove sign plates and equipment	Impact wrench	83	2	30	-5.2	80.8
	Compressor	75	2	30	-5.2	72.8
	Angle grinder	80	1	20	-7.0	73.0
	Telescopic handler	79	2	85	-10.0	72.0
	Diesel scissor lift	78	1	40	-4.0	74.0
Landscaping	Tracked excavator (17T)	73	1	85	-0.7	72.3
	Dumper (6T)	79	2	85	-0.7	81.3

6.2.2 Table 6.2 shows the predicted highest daily daytime (L_{Aeq} , dB) construction noise levels without mitigation at selected representative sensitive receptors in the study area.

Table 6.2: Predicted highest daily daytime construction noise levels at selected location – No mitigation

Sensitive Receptor	Construction noise levels (L _{Aeq} ,dB)																															
	2021				2022												2023												2024			
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Grove Farm, CM14 5NG	67	67	72	78	78	73	74	73	71	71	75	73	74	73	72	72	70	76	73	78	78	77	78	79	78	76	73	73	68	68	68	
Maylands Cottages, RM3 0AZ	61	74	74	64	64	64	64	65	64	64	64	63	63	64	64	64	64	64	66	67	68	66	65	64	64	64	64	63	63	63	63	
Caravan Park, RM3 0AW	64	64	67	67	67	67	68	74	73	73	74	69	68	71	70	69	72	73	72	71	72	70	70	73	71	71	71	66	61	64	63	
17 Colchester Road, RM3 0AW	63	74	74	65	66	66	65	66	67	66	66	66	63	63	64	64	64	64	73	67	68	66	65	64	64	64	64	63	63	63	63	
63 Brook Street, CM14 5NA	46	49	53	54	55	55	54	54	54	54	57	55	57	58	58	56	57	55	55	58	60	58	59	59	59	58	56	55	51	54	53	
60 Brook Street, CM14 5ND	48	50	54	56	56	55	55	56	55	55	58	56	57	57	58	56	57	57	55	59	60	60	60	61	61	60	58	57	53	51	50	
13 Nag's Head Lane, CM14 5NJ	30	34	39	40	40	40	40	41	41	41	43	40	41	42	42	41	41	41	40	44	45	44	44	45	45	44	42	41	38	38	38	
Legend																																
	SOAEL exceedance													LOAEL exceedance																		

6.2.3 Table 6.3 shows the predicted highest daily night-time (L_{Aeq} , dB) construction noise levels without mitigation at selected representative sensitive receptors in the study area.

Table 6.3: Predicted highest daily night-time construction noise levels at selected location – No mitigation

Sensitive Receptor	Construction noise levels (L _{Aeq} ,dB)																																
	2021				2022												2023												2024				
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	
Grove Farm, CM14 5NG	0	10	68	58	61	61	58	61	58	40	40	42	41	53	67	66	67	53	55	62	70	70	35	50	76	70	70	70	70	65	65	65	65
Maylands Cottages, RM3 0AZ	0	10	52	51	53	53	51	53	52	51	51	51	50	50	51	51	51	50	50	54	51	51	50	60	52	52	51	53	54	52	51	51	51
Caravan Park, RM3 0AW	0	10	51	48	51	51	48	51	58	58	58	58	51	50	53	53	52	47	57	51	51	51	34	60	55	54	50	59	61	57	61	61	61
17 Colchester Road, RM3 0AW	0	10	54	54	56	56	54	56	54	51	51	51	50	50	51	51	51	50	50	59	51	51	50	60	52	52	51	63	63	52	51	51	51
63 Brook Street, CM14 5NA	0	10	47	36	38	38	37	38	37	33	33	33	30	46	53	53	52	46	48	54	51	51	28	45	53	53	51	52	56	54	50	50	50
60 Brook Street, CM14 5ND	0	10	49	37	40	40	38	40	38	34	34	35	32	45	51	52	51	45	46	52	52	52	28	46	55	55	52	53	60	60	47	47	47
13 Nag's Head Lane, CM14 5NJ	0	10	32	21	23	23	22	23	23	21	21	22	19	30	34	36	35	30	31	37	36	36	18	33	39	38	35	36	42	41	34	34	34
Legend																																	
	SOAEL exceedance														LOAEL exceedance																		

6.2.4 Table 6.4 shows the predicted highest daily daytime (L_{Aeq} , dB) construction noise levels with the recommended mitigation as outlined in the chapter (Chapter 6) of ES (application document TR010029/APP/6.1) at selected representative sensitive receptors in the study area.

Table 6.4: Predicted highest daily daytime construction noise levels at selected location – With mitigation

Sensitive Receptor	Construction noise levels (L _{Aeq} ,dB)																															
	2021				2022												2023												2024			
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Grove Farm, CM14 5NG	57	57	62	68	68	68	63	64	63	61	61	65	63	64	63	62	62	60	66	63	68	68	67	68	69	68	66	63	63	58	58	58
Maylands Cottages, RM3 0AZ	51	74	74	54	54	54	54	54	55	54	54	54	53	53	54	54	54	53	54	56	57	58	56	55	54	54	54	54	53	53	53	53
Caravan Park, RM3 0AW	64	64	67	67	67	67	68	74	73	73	74	69	68	71	70	69	72	73	72	71	72	70	70	73	71	71	71	66	61	64	63	
17 Colchester Road, RM3 0AW	63	74	74	65	66	66	65	66	67	66	66	66	63	63	64	64	64	63	64	73	67	68	66	65	64	64	64	64	63	63	63	63
63 Brook Street, CM14 5NA	46	49	53	54	55	55	54	54	54	54	54	57	55	57	58	58	56	55	55	55	58	60	58	59	59	59	58	56	55	51	54	53
60 Brook Street, CM14 5ND	48	50	54	56	56	56	55	55	56	55	55	58	56	57	57	58	56	56	57	55	59	60	60	60	61	61	60	58	57	53	51	50
13 Nag's Head Lane, CM14 5NJ	30	34	39	40	40	40	40	40	41	41	41	43	40	41	42	42	41	41	41	40	44	45	44	44	45	45	44	42	41	38	38	38
Legend																																
	SOAEL exceedance															LOAEL exceedance																

6.2.5 Table 6.5 shows the predicted highest daily daytime (L_{Aeq} , dB) construction noise levels with the recommended mitigation as outlined in the Noise and Vibration chapter in Volume 1 at selected representative sensitive receptors in the study area.

Table 6.5: Predicted highest daily night-time construction noise levels at selected location – With mitigation

Sensitive Receptor	Construction noise levels (L _{Aeq} ,dB)																															
	2021				2022												2023												2024			
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Grove Farm, CM14 5NG	0	10	58	48	51	51	48	51	48	30	30	32	31	43	57	56	57	43	45	52	60	60	25	40	66	37	60	60	60	55	55	55
Maylands Cottages, RM3 0AZ	0	10	42	41	43	43	41	43	42	41	41	41	40	40	41	41	41	40	40	44	41	41	40	50	42	42	41	44	44	42	41	41
Caravan Park, RM3 0AW	0	10	51	48	51	51	48	51	58	58	58	58	51	50	53	53	52	50	47	57	51	51	34	60	55	54	50	59	61	57	61	61
17 Colchester Road, RM3 0AW	0	10	54	54	56	56	54	56	54	51	51	51	50	50	51	51	51	50	50	59	51	51	50	60	52	52	51	63	63	52	51	51
63 Brook Street, CM14 5NA	0	10	47	36	38	38	37	38	37	33	33	33	30	46	53	53	52	46	48	54	51	51	28	45	53	53	51	52	56	54	50	50
60 Brook Street, CM14 5ND	0	10	49	37	40	40	38	40	38	34	34	35	32	45	51	52	51	45	46	52	52	52	28	46	55	55	52	53	60	60	47	47
13 Nag's Head Lane, CM14 5NJ	0	10	32	21	23	23	22	23	23	21	21	22	19	30	34	36	35	30	31	37	36	36	18	33	39	38	35	36	42	41	34	34
Legend																																
	SOAEL exceedance														LOAEL exceedance																	

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